

$\{f_{\alpha}^{(1)}\}_{\alpha \in \mathbb{N}}$ and $\{f_{\alpha}^{(2)}\}_{\alpha \in \mathbb{N}}$ are two sequences of functions in $L^2(\mathbb{R}^d)$ such that $\|f_{\alpha}^{(1)}\|_{L^2} \leq 1$ and $\|f_{\alpha}^{(2)}\|_{L^2} \leq 1$ for all $\alpha \in \mathbb{N}$. Let $\{g_{\alpha}\}_{\alpha \in \mathbb{N}}$ be a sequence of functions in $L^2(\mathbb{R}^d)$ such that $\|g_{\alpha}\|_{L^2} \leq 1$ for all $\alpha \in \mathbb{N}$. Define $f_{\alpha} = f_{\alpha}^{(1)} + f_{\alpha}^{(2)} + g_{\alpha}$. Then $\{f_{\alpha}\}_{\alpha \in \mathbb{N}}$ is a sequence of functions in $L^2(\mathbb{R}^d)$ such that $\|f_{\alpha}\|_{L^2} \leq 3$ for all $\alpha \in \mathbb{N}$.

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